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6.	Designing Class Diagram and Sequence Diagram.
7.	Designing Use Case Diagram and Activity Diagram.
8.	Testing – Test Plans and Test Cases.
9.	Load Testing and Pipelines.
10.	GitHub: Project Structure & Naming Conventions.

EXP NO : 01

AZURE DEVOPS ENVIRONMENT SETUP

AIM

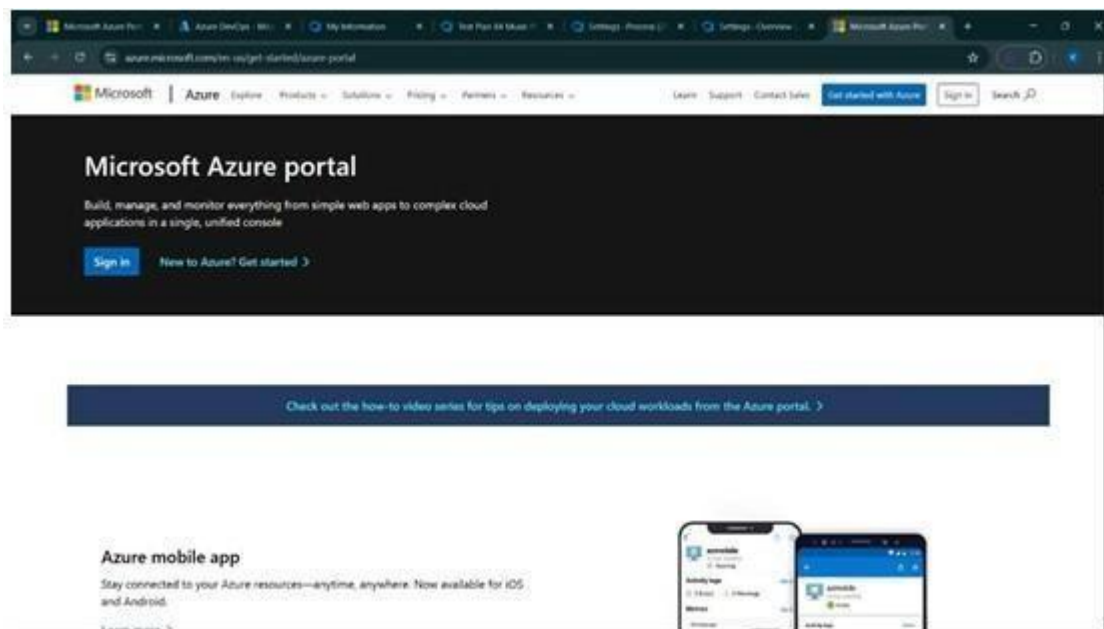
To set up and access the Azure DevOps environment by creating an organization through the Azure portal.

INSTALLATION

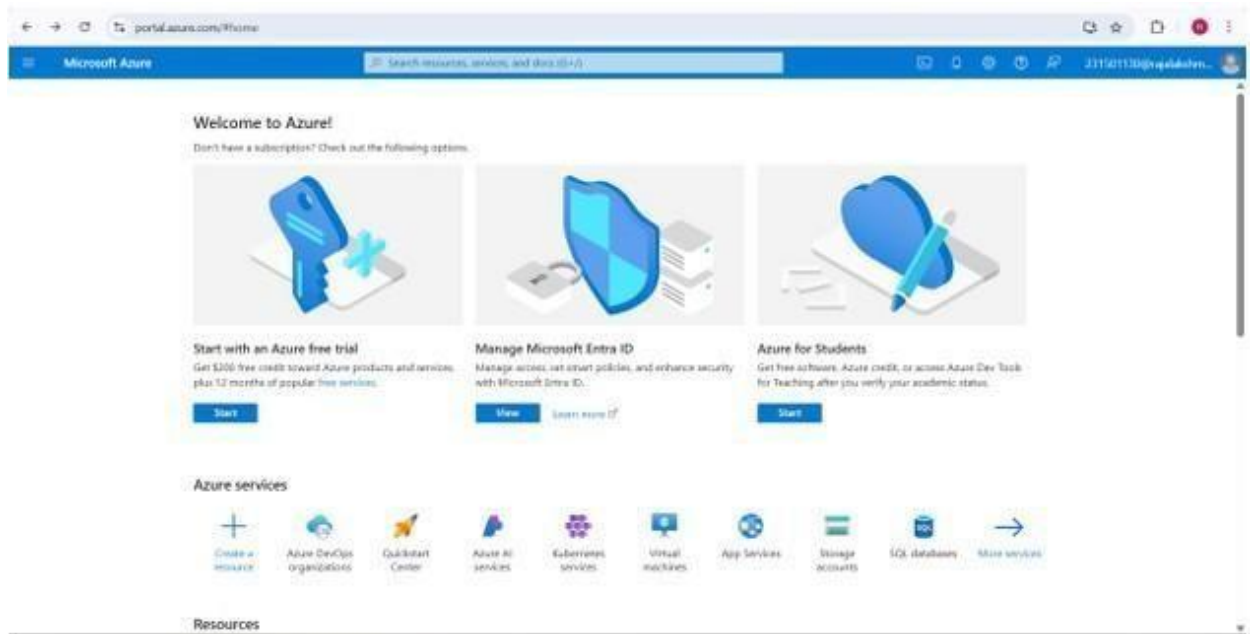
1. Open your web browser and go to the Azure website: <https://azure.microsoft.com/en-us/getstarted/azure-portal>.

Sign in using your Microsoft account credentials.

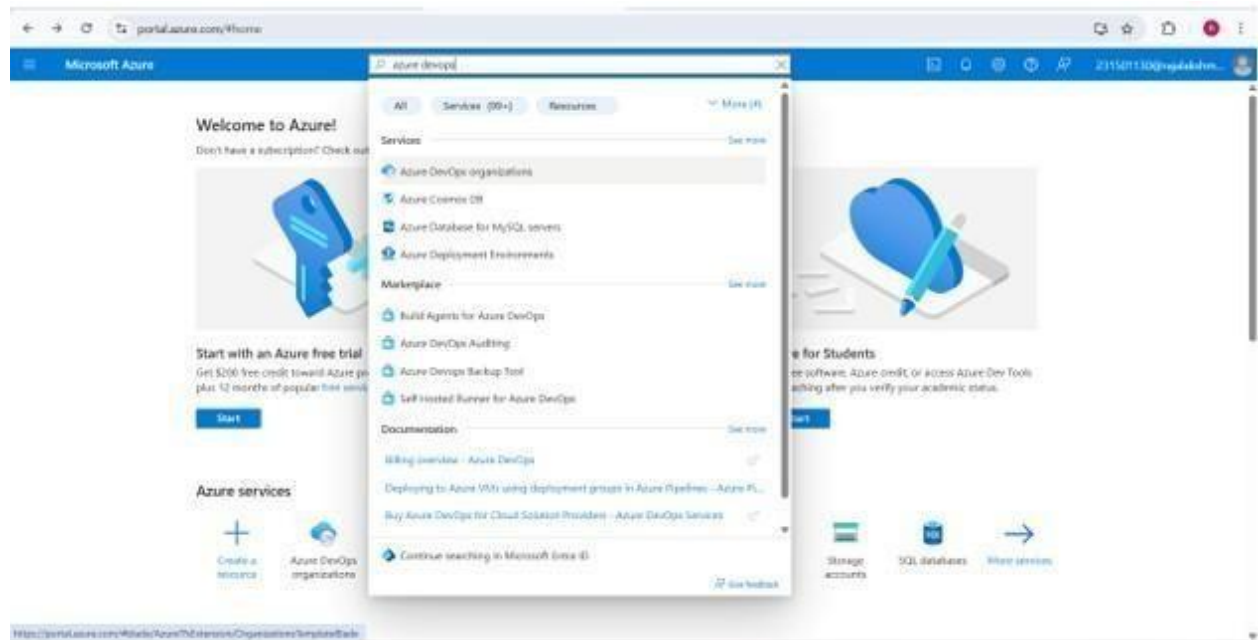
If you don't have a Microsoft account, you can create one here: <https://signup.live.com/?lic=1>



2. Azure home page



3. Open DevOps environment in the Azure platform by typing **Azure DevOps Organizations** in the search bar.



4. Click on the **My Azure DevOps Organization** link and create an organization and you should be taken to the Azure DevOps Organization Home page.



RESULT :

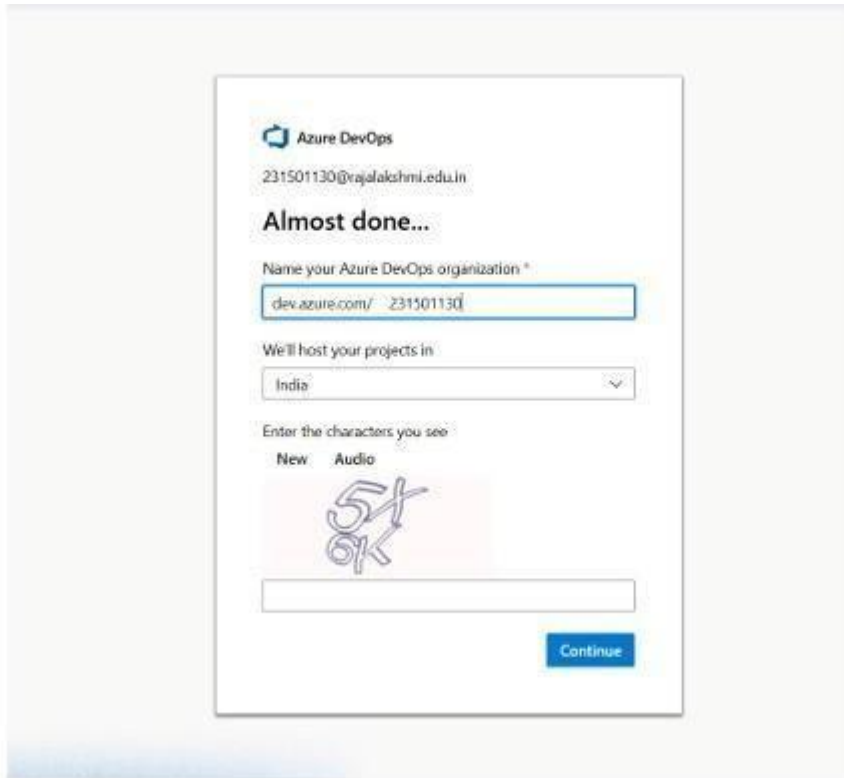
Successfully accessed the Azure DevOps environment and created a new organization through the Azure portal.

EXP NO:02	AZURE DEVOPS PROJECT SETUP AND USER STORY MANAGEMENT
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AIM

To set up an Azure DevOps project for efficient collaboration and agile work management.

1.Create An Azure Account



2.Create the First Project in Your Organization

- a. After the organization is set up, you'll need to create your first project. This is where you'll begin to manage code, pipelines, work items, and more.
- b. On the organization's Home page, click on the New Project button.
- c. Enter the project name, description, and visibility options:
 - Name: Choose a name for the project (e.g., LMS).
 - Description: Optionally, add a description to provide more context about the project.
 - Visibility: Choose whether you want the project to be Private (accessible only to those invited) or Public (accessible to anyone).
- d. Once you've filled out the details, click Create to set up your first project.

Create new project


×

Project name *

OQS

Description


Visibility



Public

Anyone on the internet can view the project. Certain features like TFVC are not supported.

☐




Private

Only people you give access to will be able to view this project.

☒


Public projects are disabled for your organization. You can turn on public visibility with [organization policies](#).

^ Advanced

Version control 

Git

▼

Work item process 

Basic

▼

Cancel>Create

3.Once logged in, ensure you are in the correct organization. If you're part of multiple organizations, you can switch between them from the top left corner (next to your user profile). Click on the Organization name, and you should be taken to the Azure DevOps Organization Home page.



Ranjith Kumar

ranjithkumar27210@outlook.com

Edit profile

Microsoft account

India

ranjithkumar27210@outlook.com

Visual Studio Dev Essentials

Get everything you need to build and deploy your app on any platform.

[Use your benefits](#)

Azure DevOps Organizations

Create new organization

dev.azure.com/ranjithkumar27210 (Owner)

Projects



ATM



expense tracker



Expense tracker app



Attendance management

[New project](#)

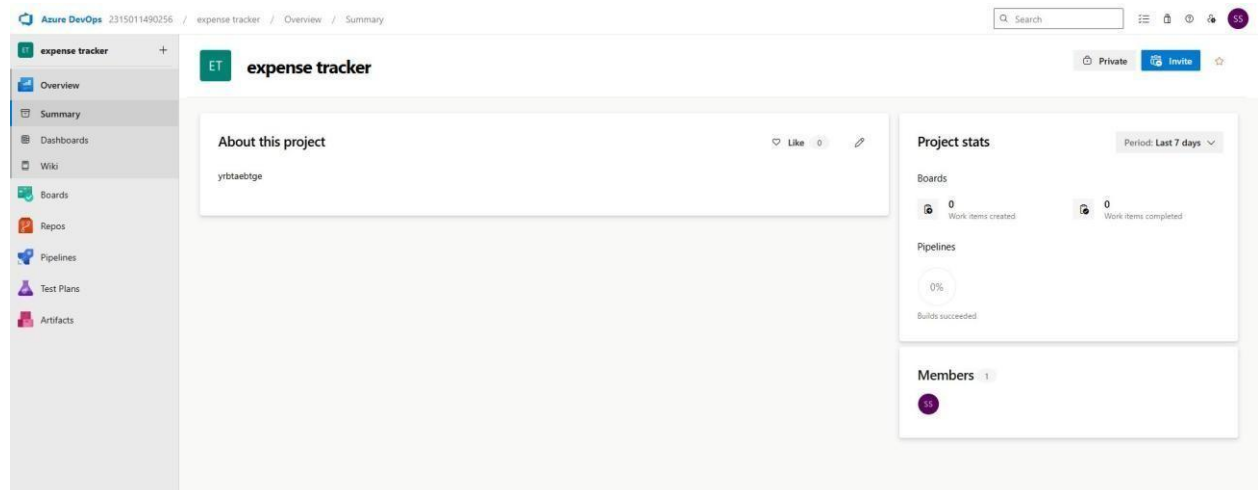
Actions

[Open in Visual Studio](#)

dev.azure.com/rkorganization (Owner)

Organizations Pending Deletion - [Expand](#)

4. Project dashboard

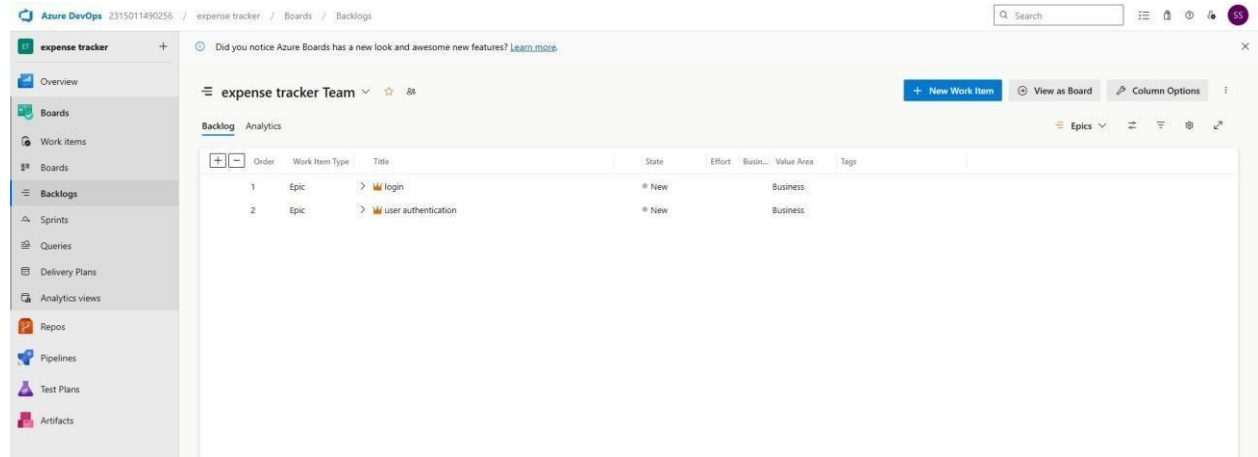


5. To manage user stories:

- From the left-hand navigation menu, click on Boards. This will take you to the main Boards page, where you can manage work items, backlogs, and sprints.

b. On the work items page, you'll see the option to Add a work item at the top. Alternatively, you can find a + button or Add New Work Item depending on the view you're in. From the Add a work item dropdown, select User Story. This will open a form to enter details for the new User Story.

c.



RESULT :

Successfully created an Azure DevOps project with user story management and agile workflow setup.

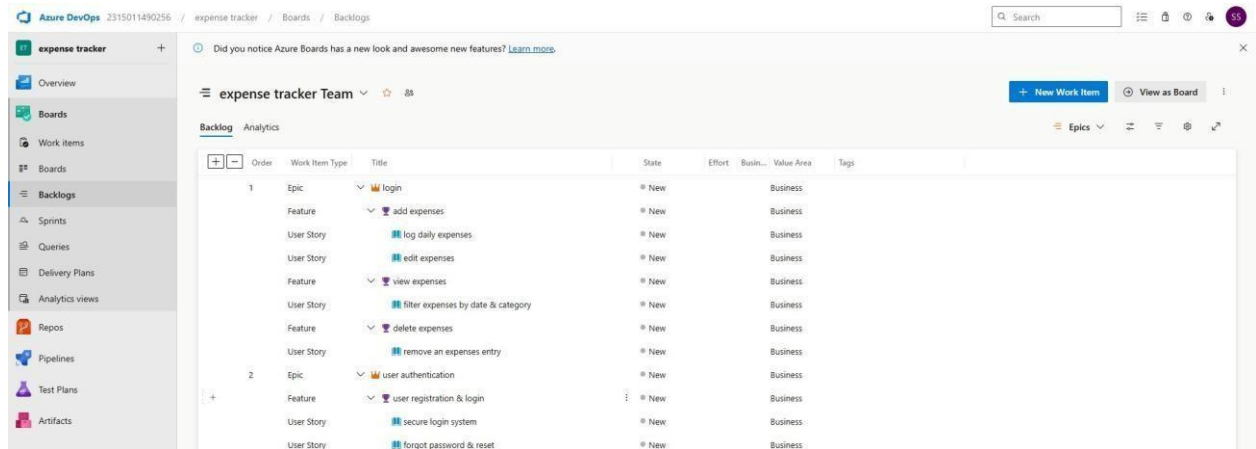
EXP NO:03

SETTING UP EPICS, FEATURES, AND USER STORIES FOR PROJECT PLANNING

AIM

To learn about how to create epics, user story, features, backlogs for your assigned project

Create Epic, Features, User Stories, Task



1.Fill in Epics

🔖 EPIC 1

1 User Management

No one selected **Our Management** Save and Close Follow

Updated by Ranjani Sat Apr 23

Start: **New** Area: Online Quiz System
Reason: **New** Location: Online Quiz System/sprint 1

Description
Click to add Description

Discussion
Add a comment. Use # to link a work item, @ to mention a person, or ! to link a pull request.
[switch to Markdown editor](#)

Planning
Priority: 2
Risk
Effort
Business Value
Time Criticality
Start Date: Select a date...
Target Date: Select a date...

Deployment
To track releases associated with this work item, go to [Releases](#) and turn on deployment status reporting for Boards in your pipeline's Options menu. [Learn more about deployment status reporting](#)

Development
Add link
Link an Azure Repos [commit](#), [pull request](#) or [branch](#) to see the status of your development. You can also [create a branch](#) to get started.

Related Work

2.Fill in Features

🔖 FEATURE 2

2 User Registration & Login

No one selected 0 Comments Add Tag Save and Close Follow

Updated by Ranjani Sat Apr 23

Start: **New** Area: Online Quiz System
Reason: **New** Location: Online Quiz System/sprint 1

Description

Discussion
Add a comment. Use # to link a work item, @ to mention a person, or ! to link a pull request.
[switch to Markdown editor](#)

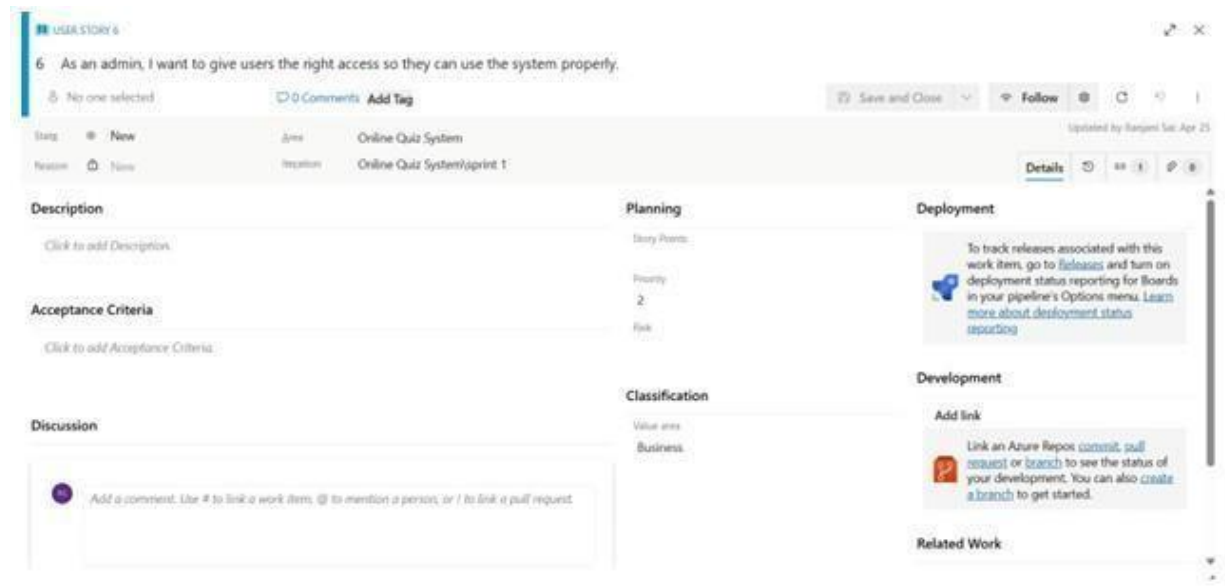
Planning
Priority: 2
Risk
Effort
Business Value
Time Criticality
Start Date: Select a date...
Target Date: Select a date...

Deployment
To track releases associated with this work item, go to [Releases](#) and turn on deployment status reporting for Boards in your pipeline's Options menu. [Learn more about deployment status reporting](#)

Development
Add link
Link an Azure Repos [commit](#), [pull request](#) or [branch](#) to see the status of your development. You can also [create a branch](#) to get started.

Related Work

3.Fill in User Story Details



RESULT :

Thus, the creation of epics, features, user story and task has been created successfully.

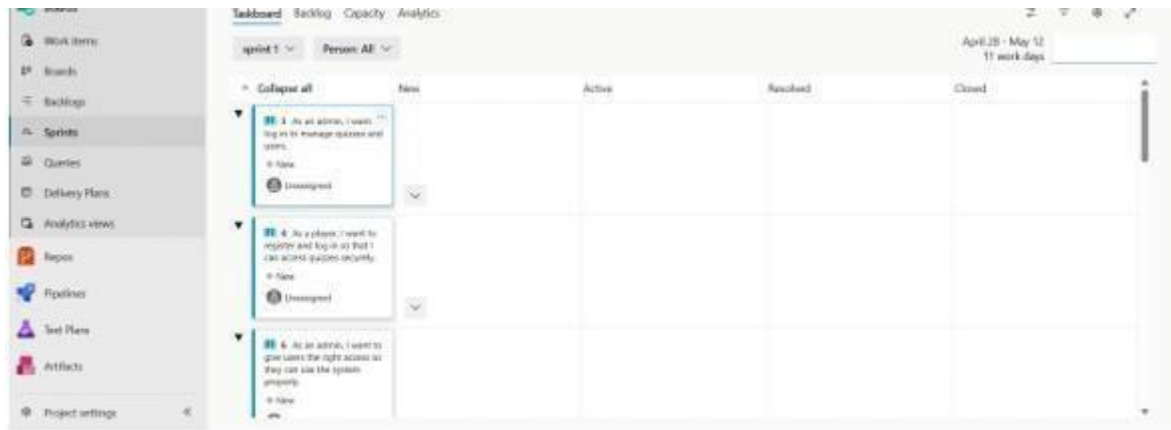
EXP NO:04	SPRINT PLANNING
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AIM

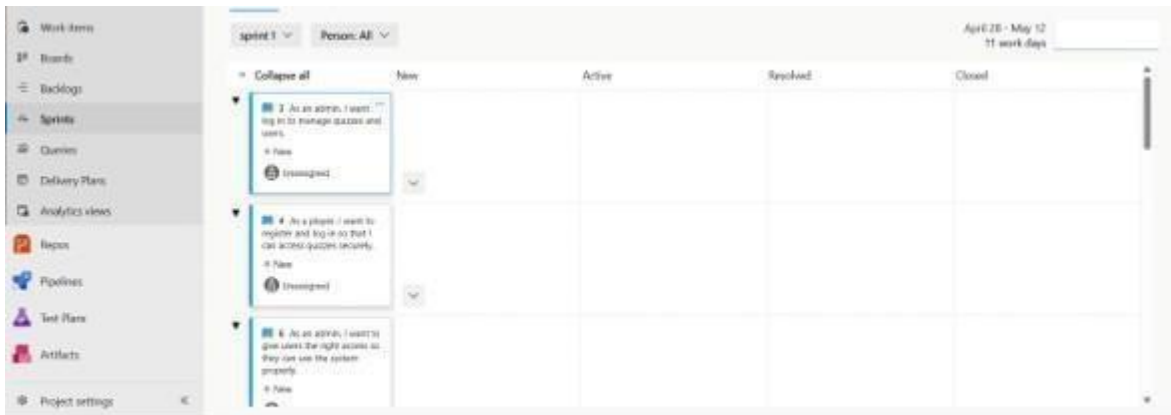
To assign user story to specific sprint for the Online Quiz System.

Sprint Planning

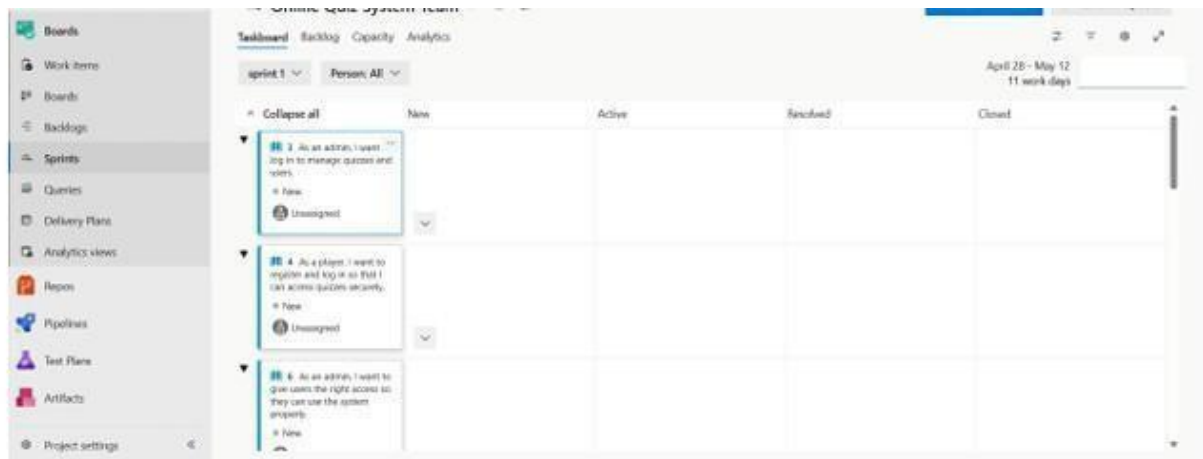
Sprint 1



Sprint 2



Sprint 3



RESULT :

The Sprints have been created for Online Quiz System.

EXP NO :05

POKER ESTIMATION

AIM

Create Poker Estimation for the user stories – Online Quiz System

Poker Estimation

The screenshot displays a user story card titled "USER STORY 13" with the text: "13 As an admin, I want to manage a question bank so I can reuse questions easily." The card includes a "No one selected" status, "0 Comments", and an "Add Tag" button. It also features a "Save and Close" button, a "Follow" button, and a "Details" tab. The card is categorized as "New" with a "Reason" of "None" and a "Negation" of "Online Quiz System/vprint 1". The card is updated by "Rangana" on "Sat, Apr 23". The card is divided into several sections: "Description" (with a "Click to add Description" prompt), "Acceptance Criteria" (with a "Click to add Acceptance Criteria" prompt), "Discussion" (with a "Add a comment" prompt), "Planning" (with a "Story Points" field set to "2" and a "Risk" field), "Classification" (with a "Value area" field set to "Business"), "Deployment" (with a "To track releases associated with this work item, go to Releases and turn on deployment status reporting for Boards in your pipeline's Options menu. Learn more about deployment status reporting" text), "Development" (with an "Add link" prompt and a "Link an Azure Repos commit, pull request or branch to see the status of your development. You can also create a branch to get started." text), and "Related Work" (with a "Add link" prompt).

RESULT :

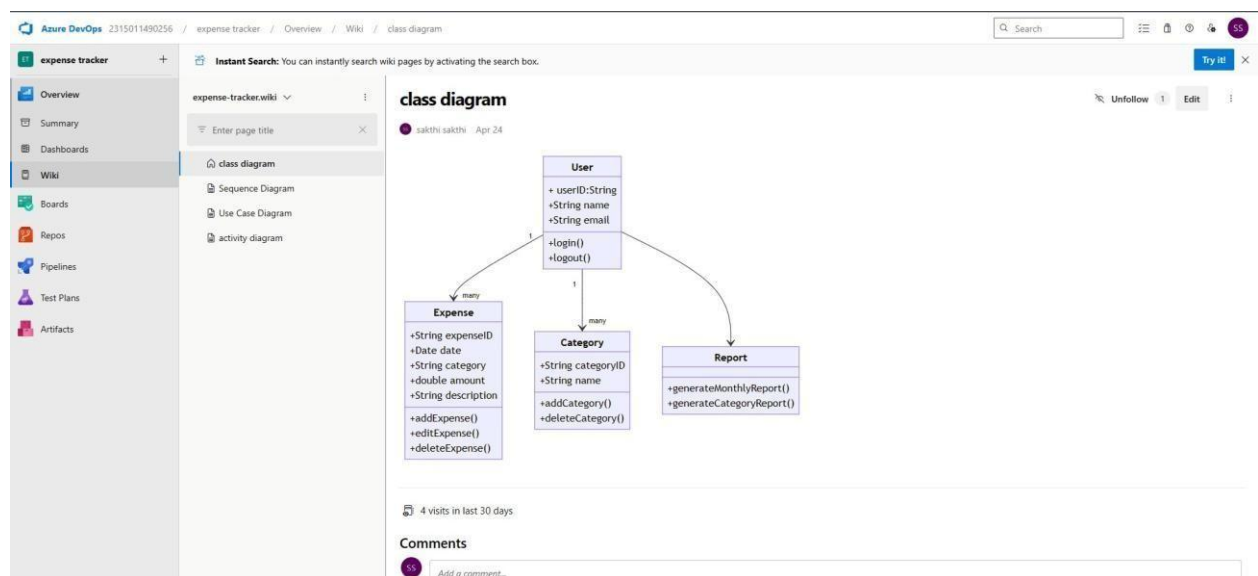
The Estimation/Story Points is created for the project using Poker Estimation.

EXP NO :06	DESIGNING CLASS AND SEQUENCE DIAGRAMS FOR PROJECT ARCHITECTURE
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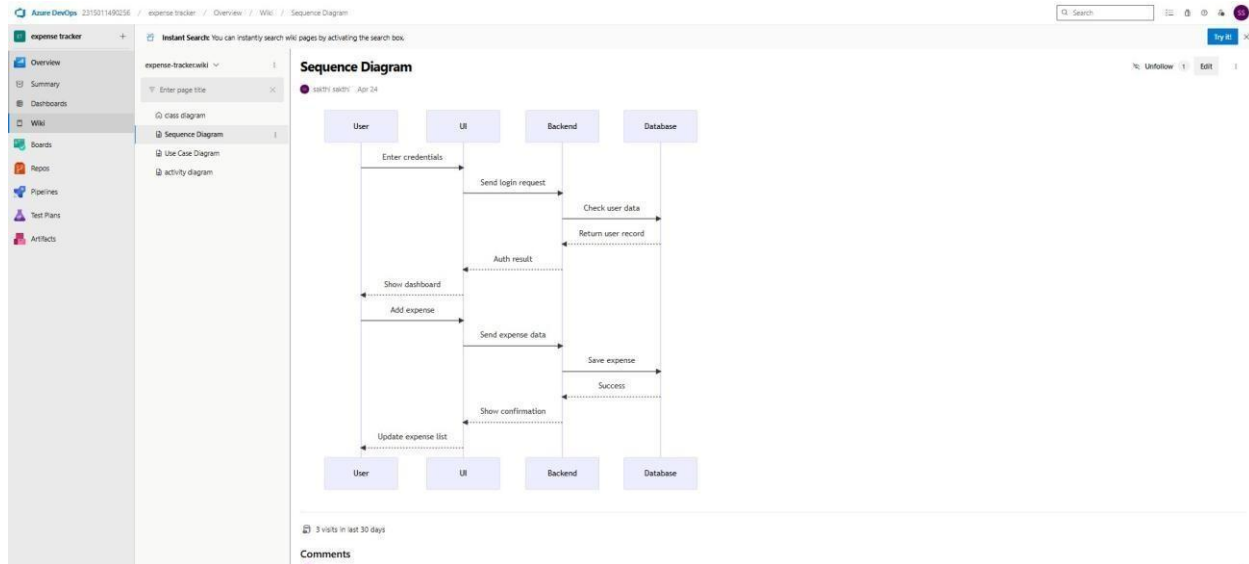
AIM

To Design a Class Diagram and Sequence Diagram for the given Project.

6A. Class Diagram



6B. Sequence Diagram



RESULT :

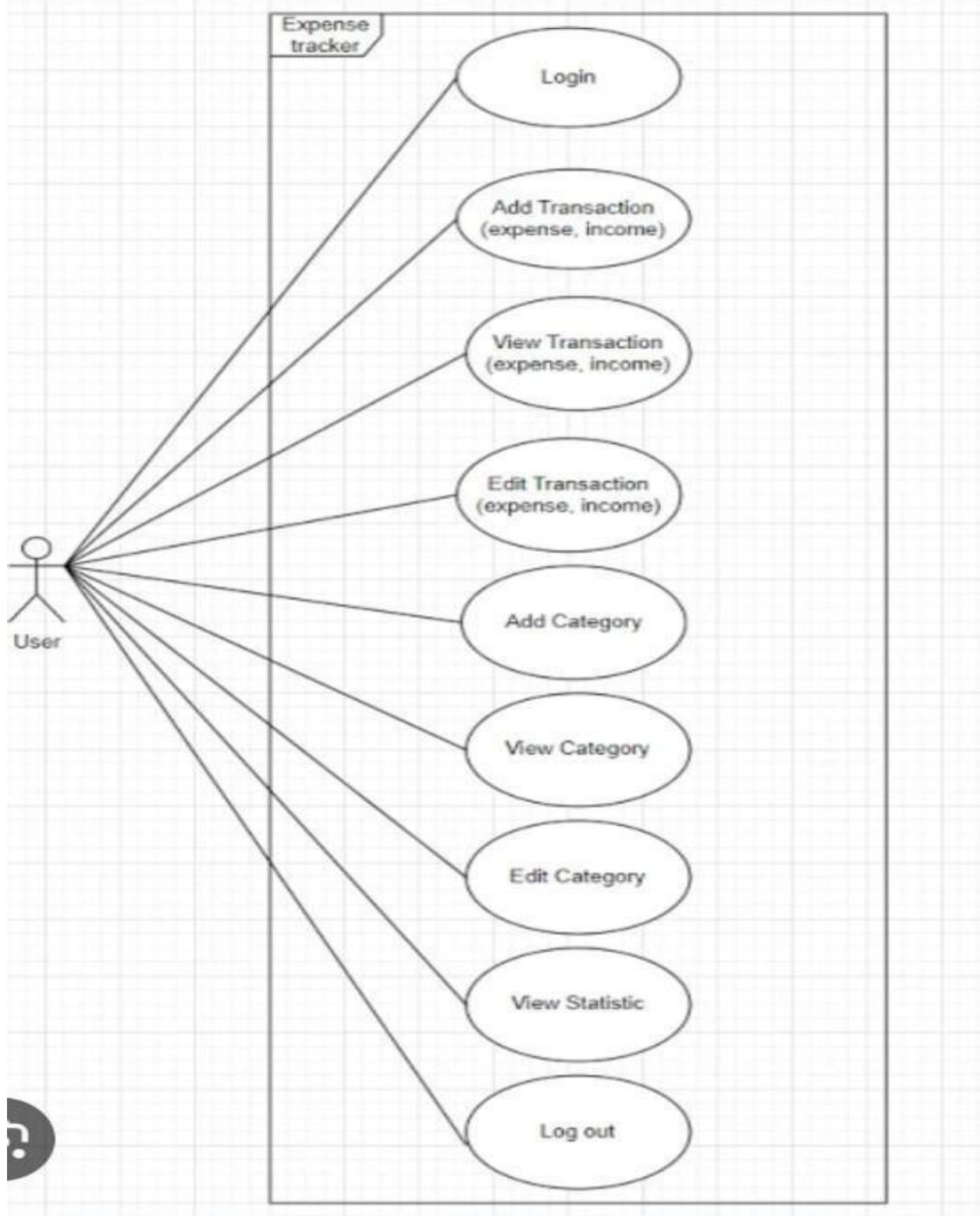
The Class Diagram and Sequence Diagram is designed Successfully for the Online Quiz System.

EXP NO:07	DESIGNING USE-CASE AND ACTIVITY DIAGRAMS FOR PROJECT STRUCTURE
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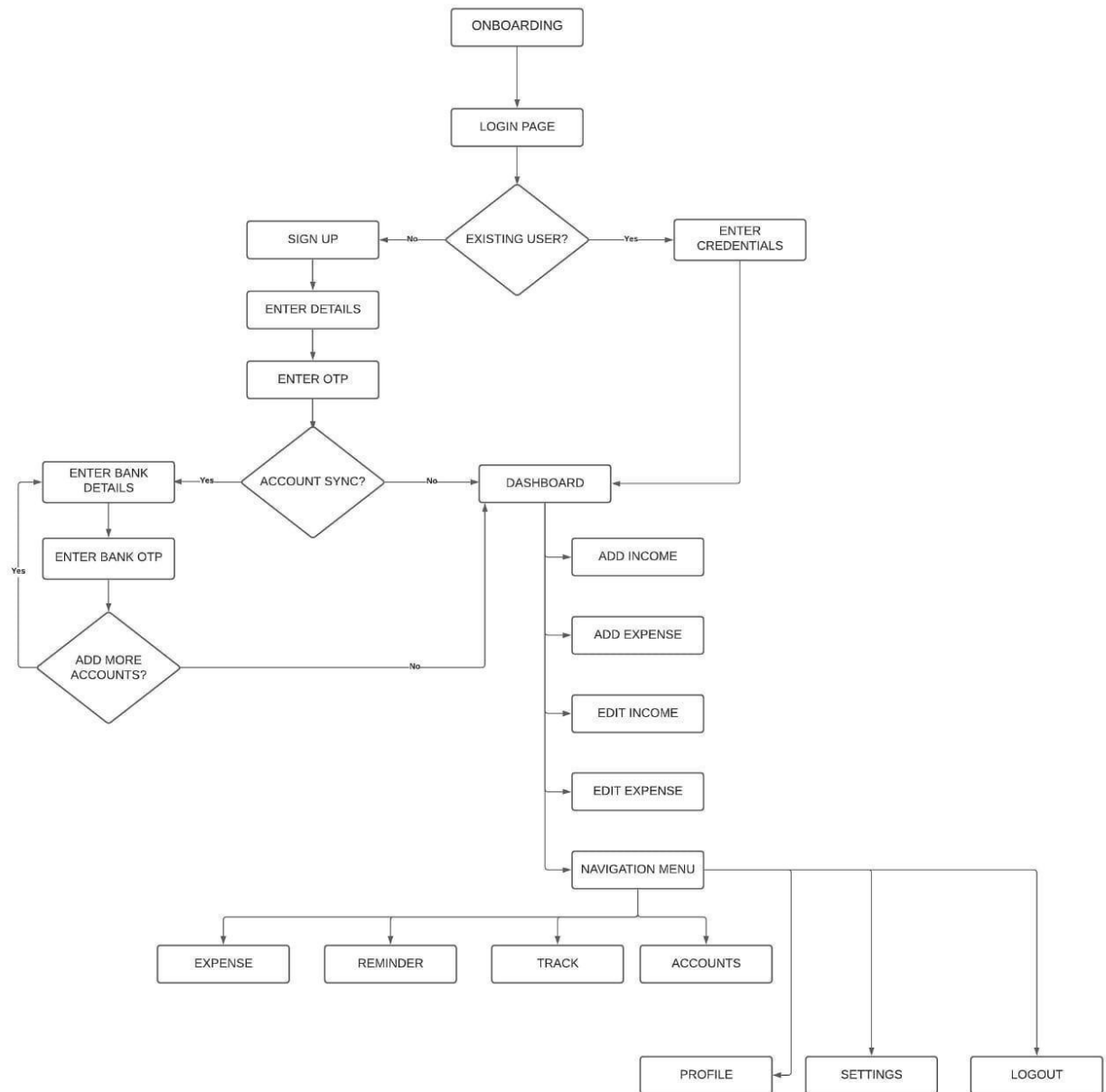
AIM

To Design an Use-Case Diagram and Activity Diagram for the given Project

7A. Use-Case Diagram



7B. Activity Diagram



RESULT :

The Use-Case Diagram and Activity Diagram is designed Successfully for the Online Quiz System.

EXP NO:08**TESTING – TEST PLANS AND TEST CASES****AIM**

Test Plans and Test Case and write two test cases for at least five user stories showcasing the happy path and error scenarios in azure DevOps platform.

Test Planning and Test Case Test Case Design Procedure 1. Understand Core Features of the Application

- User Login •

2. Define User Interactions

- Each test case simulates a real user behaviour (e.g., logging in, submitting quizzes, viewing results)

3. Design Happy Path Test Cases

- Focused on validating that all core functionalities work correctly under normal conditions • Example: Player registers and logs in, submits quizzes and views results

4. Design Error Path Test Cases

- Simulate invalid inputs, system issues or failed actions to ensure proper error handling.
- Example: Login with invalid credentials, submission without attachments, unauthorized access to admin panel.

5. Break Down Steps and Expected Results

- Each test case includes a clear sequence of actions and expected results.
- Ensures both manual testers and automation tools can follow the process easily.

6. Use Clear Naming and IDs

- Test cases are uniquely identifies (e.g., TC01 – Valid Login, TC03 – Invalid Password).

- Facilities easy mapping to features and tracking in Azure DevOps.

7. Separate Test

- Grouped by functionality such as:

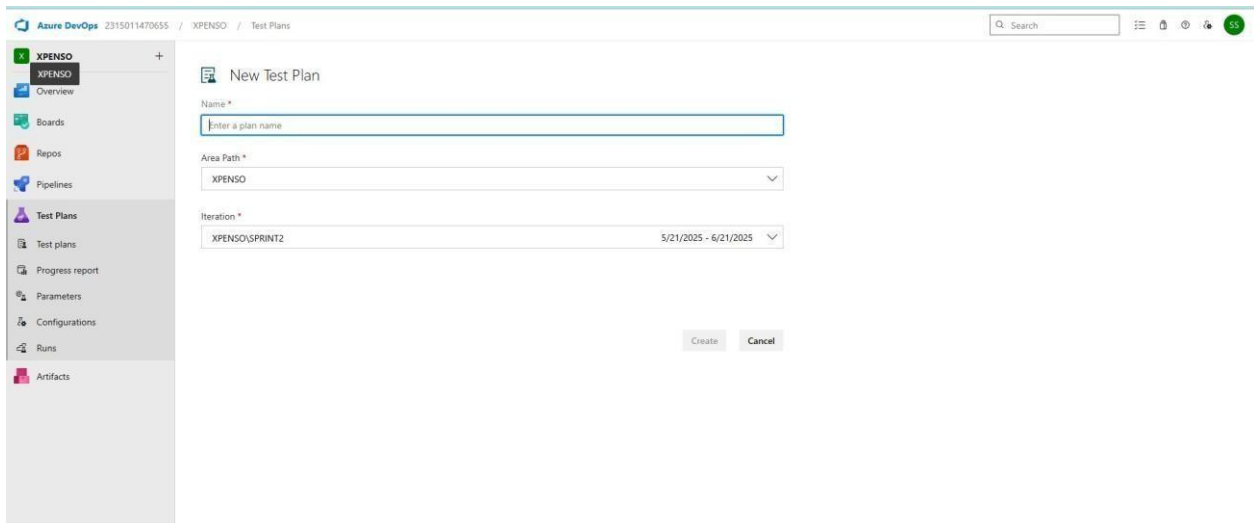
- o Login and Registration
- o Quizzes Submission
- o Viewing Results
- o Admin Functions

- Improves organization and enables focused execution in Azure DevOps.

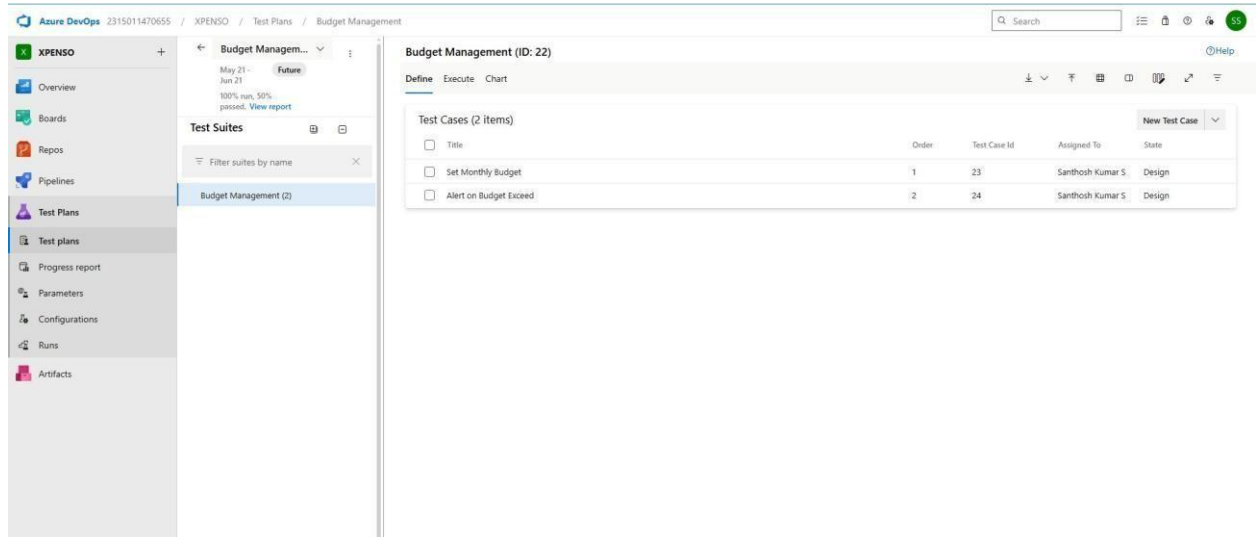
8. Prioritize and Review

- High-priority assigned to critical workflows like login, quizzes and results.
- Reviewed for completeness, accuracy and alignment with user stories and features definition.

1.New test plan



2.Test suite



3. Test case

Give two test cases for at least five user stories showcasing the happy path and error scenarios in azure DevOps platform. Online

Quiz System– Test Plans

USER STORIES

- As an admin, I want to log in to manage quizzes and users (ID: 3).
- As a player, I want to register and log in so that I can access quizzes securely (ID: 4).
- As an admin, I want to give users the right access so they can use the system properly (ID: 6).
- As a player, I want to see only my quizzes and progress so that it's easy to use (ID: 7).
- As an admin, I want to create and configure quizzes with time limits so I can control quiz

TEST SUITES Test Suite: TS01 - Login Verification (ID: 23)

1. TC01 –Valid Login

o Action:

- Go to the Sign-Up page.
- Enter valid name, email, and password.
- Click “Login” button.

o Expected Results:

- Login form is displayed.
- Fields accept valid credentials without error.
- Account is successfully logged in and redirected to the dashboard.

o Type: Happy

Path 2. TC02 – Invalid Username o

Action:

- Go to the Login page.
- Enter invalid or unregistered username.
- Click on "Login" button. o

Expected Results:

- Login form is displayed.
- System displays an error message like “Invalid username”.
- User is not logged in and remains on the login page.

The top screenshot displays the 'Budget Management (ID: 22)' test plan in Azure DevOps. It shows a table of test points with the following data:

Test Points (2 items)	Outcome	Order	Test Case Id	Configuration	Tester
<input type="checkbox"/> Title	Passed	1	23	Windows 10	Santhosh Kumar S
<input type="checkbox"/> Set Monthly Budget	Failed	2	24	Windows 10	Santhosh Kumar S
<input type="checkbox"/> Alert on Budget Exceed					

The bottom screenshot shows the 'Set Monthly Budget' test case (ID: 23) in the 'Design' state. It includes a list of steps and a deployment section.

Steps:

1. Go to "Budgets"
2. Select a category
3. Enter a budget value
4. Budget is saved and visible under Budgets screen

Deployment:

To track releases associated with this work item, go to [Releases](#) and turn on deployment status reporting for Boards in your pipeline's Options menu. [Learn more about deployment status reporting](#)

Development:

Add link

Link an Azure Repos [commit](#), [pull request](#) or [branch](#) to see the status of your development. You can also [create a branch](#) to get started.

Related Work:

Add link

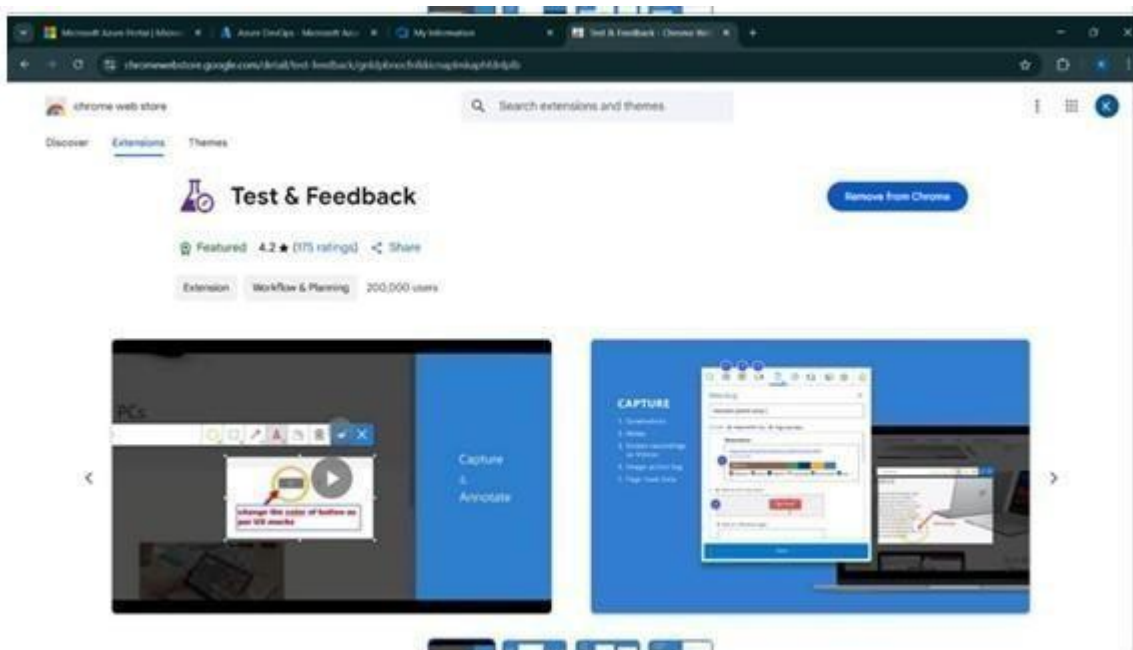
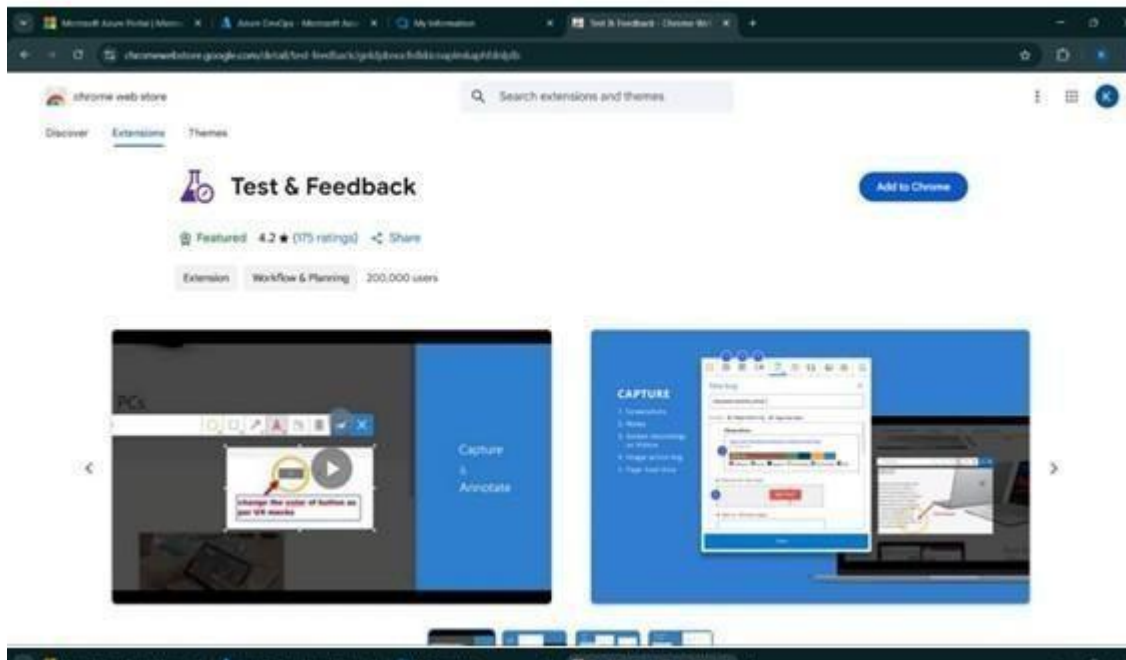
[Add an existing work item as a parent](#)

Status:

Priority: 2

Automation status: Not Automated

4.Installation of test



5. Running the test cases

The screenshot displays the Azure DevOps Test Plans interface for a project named 'XPENSO'. The left sidebar shows the navigation menu with options like Overview, Boards, Repos, Pipelines, Test Plans, and Artifacts. The main area shows the 'Budget Management' test suite, which is currently in a 'Future' state. The test suite details include a run history for May 21 - Jun 21, showing a 100% run and 50% passed status. The test cases are listed in a table with columns for Title, Order, Test Case Id, Assigned To, and State.

Title	Order	Test Case Id	Assigned To	State
Set Monthly Budget	1	23	Santhosh Kumar S	Design
Alert on Budget Exceed	2	24	Santhosh Kumar S	Design

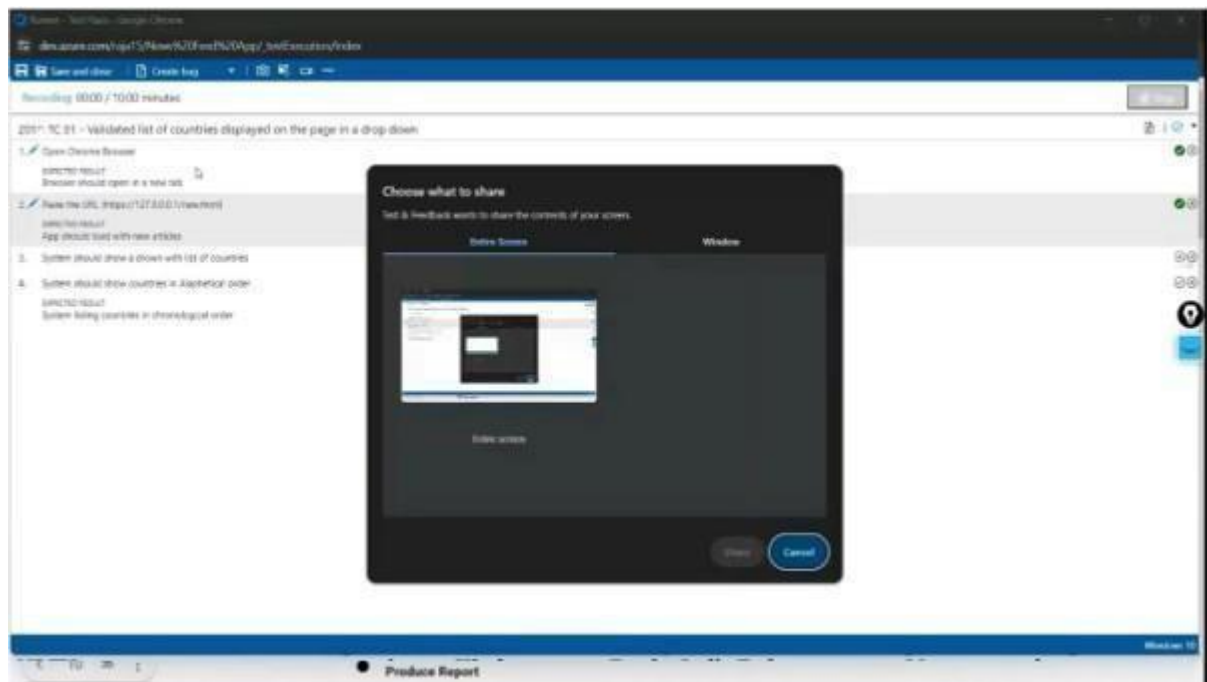
A context menu is open for the 'Alert on Budget Exceed' test case, showing options such as 'View Linked Items', 'Open test case', 'Remove', 'Edit test case(s) in grid', 'Edit test case(s)', 'Assign configuration', 'Copy test case(s)', 'Export test case(s) to CSV', and 'Export test case(s) to XLSX'.

Below the test cases, the 'Run' button is visible, indicating the test suite is ready to be executed. The bottom section of the image shows a browser window displaying the test results for the 'Alert on Budget Exceed' test case. The results show a 'Valid Login' test case with a 'Pass' status. The test steps are listed as follows:

1. Navigate to the login page.
2. enter a valid username/email.
3. enter valid password.
4. Click the login button.
5. EXPECTED RESULT: User is redirected to the dashboard/homepage.

The bottom of the image shows a Windows taskbar with the date and time as 12:31 PM on 15-05-2021.

6. Recording the test case



7. Creating the bug

NEW BUG

user should not login with invalid details

Unassigned 0 comments Add tag Save & Close

Status: New Reason: New Assignee: Online Quiz System Regression: Online Quiz System/print 1 Details

Repro Steps

5/17/2025 11:00 AM Bug filed on "Valid Login"

Step no.	Result	Title
1.	None	Navigate to the login page.
2.	None	enter a valid username/email.
3.	None	enter valid password.
4.	None	Click the login button.
5.	None	

Planning

Assigned Reason

Story Points

Priority

2

Severity

3 - Medium

Activity

Effort (Hours)

Original Estimate

Remaining

Deployment

To track releases associated with this work item, go to [Releases](#) and turn on deployment status reporting for Boards in your pipeline's Options menu. Learn more about deployment status reporting.

Development

+ Add link

Link an Azure Repos [commit](#), [pull request](#), or [branch](#) to see the status of your development. You can also [create a branch](#) to get started.

Related Work

+ Add link -

Add an existing work item as a parent

NEW BUG

user should not enter invalid details

Unassigned 0 comments Add tag Save & Close

Status: New Reason: New Assignee: Online Quiz System Regression: Online Quiz System/print 1 Details

System Info

Browser - Name	Google Chrome 136
Browser - Language	en-US
Browser - Height	816
Browser - Width	1536
Browser - User agent	Mozilla/5.0 (Windows NT 10.0; Win64; x64; AppleWebKit/537.36 (KHTML, like Gecko) Chrome/136.0.0.0 Safari/537.36
Operating system - Name	Windows NT 10.0; Win64; x64
Operating system - Architecture	x86_64
Operating system - Processor model	12th Gen Intel(R) Core(TM) i5-12450H
Operating system - Number of processors	12
Memory - Available	6998618112
Memory - Capacity	16631895504
Display - Pixels per inch (X axis)	120
Display - Pixels per inch (Y axis)	120

Found in Build

Integrated in Build

8.Test case results

State: **New** Area: **TO DO LIST APP WITH REMINDERS**
Reason: **New** Iteration: **TO DO LIST APP WITH REMINDERS\Iteration 1**

Repro Steps

5/15/2025 5:11 AM Bug filed on "Login Verification of correct User"

Step no.	Result	Title
1.	Passed	Open the browser
		Expected Result
		Redirect to the Main SlayListLearn page
2.	Passed	Click the log in Button
3.	Passed	Enter the correct details

Test Configuration: Windows 10

Planning

Resolved Reason

Story Points

Priority: 2

Severity: 3 - Medium

Activity

Effort (Hours)

Original Estimate

Remaining

Deployment

To track releases associated with this work item, go to Releases and turn on deployment status reporting for Boards in your pipeline's Options menu. Learn more about deployment status reporting

Development

+ Add link

Link an Azure Repos commit, pull request or branch to see the status of your development. You can also create a branch to get started.

Related Work

+ Add link

Add an existing work item as a parent

Azure DevOps 2315011470655 / XPENSO / Test Plans / Budget Management

Budget Management (ID: 22)

Define Execute Chart

Test Suites (2 items)

Title	Outcome	Order	Test Case Id	Configuration	Tester
Set Monthly Budget	Passed	1	23	Windows 10	Sai
Alert on Budget Exceed	Failed	2	24	Windows 10	Sai

Azure DevOps 2315011470655 / XPENSO / Test Plans / Progress report

Progress report

Budget Management Test Suites Outcome Configuration Tester Priority Assigned To

Summary

1 Test plans 2 Test points

2 (2 / 2) Test points run 100% Run

50% (1 / 2) Pass rate 1 Passed 1 Failed

Outcome trend

Last 14 Days

Outcome trend chart showing Passed (green) and Failed (red) results over time.

Details

Test plan name	Test points	Run %	Passed %	Failed %	Not run count
Budget Management	2	100	50	50	0

11.Changing the test template

Azure DevOps

2315011470655

/ Settings / Process

Q Search

Organization Settin...
2315011470655

Q Search Settings

General

Overview

Projects

Users

Billing

Global notifications

Usage

Extensions

Microsoft Entra

Security

Security overview

Policies

Permissions

Boards

Process

Pipelines

Agent pools

Settings

Deployment pools

Parallel jobs

OAuth configurations

All processes

Processes

Fields

Help

Filter by process name

Name	Description	Team projects
Basic (default)	This template is flexible for any process and great for teams getting started with Azure DevOps.	0
Agile	This template is flexible and will work great for most teams using Agile planning methods, including those practicing Scrum.	1
Scrum	This template is for teams who follow the Scrum framework.	0
CMMI	This template is for more formal projects requiring a framework for process improvement and an auditable record of decisions.	0

Activate Windows
Go to Settings to activate Windows.

Azure DevOps

2315011470655

/ Settings / Process

Q Search

Organization Settin...
2315011470655

Q Search Settings

General

Overview

Projects

Users

Billing

Global notifications

Usage

Extensions

Microsoft Entra

Security

Security overview

Policies

Permissions

Boards

Process

Pipelines

Agent pools

Settings

Deployment pools

Parallel jobs

OAuth configurations

All processes > Agile

Work Item types

Backlog levels

Projects

Help

Filter by work item type n...

System processes cannot be customized. To add customization create an inherited process.

Name	Description
Bug	Describes a divergence between required and actual behavior, and tracks the work done to correct the defect and verify the correction.
Epic	Epics help teams effectively manage and groom their product backlog
Feature	Tracks a feature that will be released with the product
Issue	Tracks an obstacle to progress.
Task	Tracks work that needs to be done.
Test Case	Server-side data for a set of steps to be tested.
Test Plan	Tracks test activities for a specific milestone or release.
Test Suite	Tracks test activities for a specific feature, requirement, or user story.
User Story	Tracks an activity the user will be able to perform with the product

Activate Windows
Go to Settings to activate Windows.

RESULT :

The test plans and test cases for the user stories is created in Azure DevOps with Happy Path and Error Path.

EXP NO :09	CI/CD PIPELINES IN AZURE
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AIM

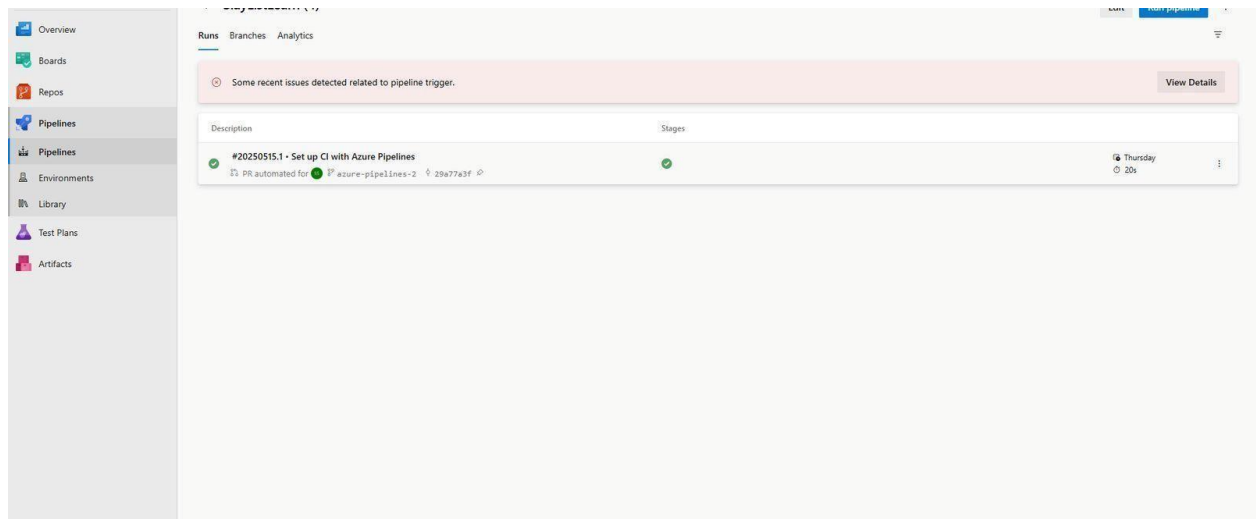
To implement a Continuous Integration and Continuous Deployment (CI/CD) pipeline in Azure DevOps for automating the build, testing, and deployment process of the Student Management System, ensuring faster delivery and improved software quality.

PROCEDURE

Steps to Create and implement pipelines in Azure:

1. Sign in to Azure DevOps and Navigate to Your Project Log in to dev.azure.com, select your organization, and open the project where your Student Management System code resides.
2. Connect a Code Repository (Azure Repos or GitHub) Ensure your application code is stored in a Git-based repository such as Azure Repos or GitHub. This will be the source for triggering builds and deployments in your pipeline.
3. Create a New Pipeline Go to the Pipelines section on the left panel and click “Create Pipeline”. Choose your source (e.g., Azure Repos Git or GitHub), and then select the repository containing your project code.
4. Choose the Pipeline Configuration You can select either the YAML-based pipeline (recommended for version control and automation) or the Classic Editor for a GUI-based setup. If using YAML, Azure DevOps will suggest a template or allow you to define your own.
5. Define Build Stage (CI - Continuous Integration) from YAML file.
6. Install dependencies (e.g., npm install, dotnet restore).
7. Build the application (dotnet build, npm run build).
8. Run unit tests (dotnet test, npm test).
9. Publish build artifacts to be used in the release stage.
10. Save and Run the Pipeline for the First Time Save the YAML or build definition and click “Run”. Azure will fetch the latest code and execute the defined build and test stages.

11. **Configure Continuous Deployment (CD)** Navigate to the Releases tab under Pipelines and click “New Release Pipeline”. Add an Artifact (from the build stage) and create a new Stage (e.g., Development, Production).
12. **Configure the CD stage** with deployment tasks such as deploying to Azure App Service, running database migrations or scripts, and restarting services using the Azure App Service Deploy task linked to your subscription and app details.
13. **Set Triggers and Approvals** Enable continuous deployment trigger so the release pipeline runs automatically after a successful build. For production environments, configure pre-deployment approvals to ensure manual verification before release.
14. **Monitor Pipelines and Manage Logs** View all pipeline runs under the Runs section. Check logs for build/test/deploy stages to debug any errors. You can also integrate email alerts or Microsoft Teams notifications for build failures.
15. **Review and Maintain Pipelines** Regularly update your pipeline tasks or YAML configurations as your application grows. Ensure pipeline runs are clean and artifacts are stored securely. Integrate quality gates and code coverage policies to maintain code quality.



RESULT :Thus the pipelines for the given project “Online Quiz System” has been executed successfully.

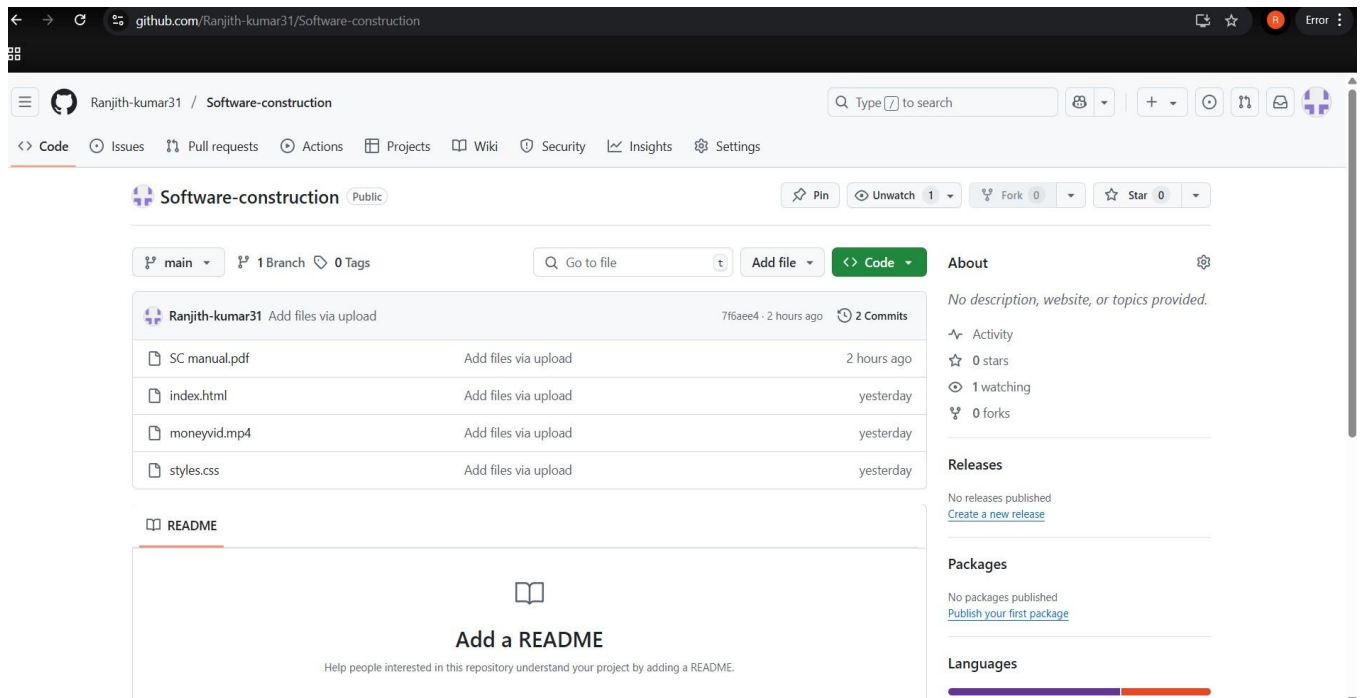
EXP NO: 10

GITHUB: PROJECT STRUCTURE & NAMING CONVENTIONS

Aim:

To provide a clear and organized view of the project's folder structure and file naming conventions, helping contributors and users easily understand, navigate, and extend the Online Quiz System.

Github:



RESULT :

The GitHub repository clearly displays the organized project structure and consistent naming conventions, making it easy for users and contributors to understand and navigate the codebase.